

I claim:

Sub B1
1. A method of substantially achieving a minimum stopping distance of a freight train consist without incurring any significant detrimental wheel slide, said method comprising the steps of:

(a) preprogramming preselected information into a computer disposed on a freight locomotive;

(b) determining a speed of such freight train consist;

(c) communicating a signal that is indicative of said speed determined in step (b) to such computer disposed on such freight locomotive;

(d) determining in such computer a pressure that can be applied to brake cylinders which will maintain substantially maximum adhesion between wheels being braked and rail surfaces in contact with such wheels;

(e) communicating a signal representative of such pressure determined in step (d) to a pressure control valve in fluid communication with such brake cylinders; and

(f) maintaining a maximum pressure on such brake cylinders that will stop such train consist in a shortest possible distance while simultaneously substantially preventing wheel slide.

2. A method of substantially achieving a minimum stopping distance of a freight train consist, according to claim 1, wherein said method includes an additional step of providing preselected feedback information to such computer.

3. A method of substantially achieving a minimum stopping distance of a freight train consist, according to claim 1, wherein said preselected information programmed into such computer disposed on a freight locomotive, in step (a), includes a length of such train consist and said method includes an additional step of using said length in maintaining a maximum pressure on such brake cylinders that will stop such train consist in a shortest possible distance while simultaneously substantially preventing wheel slide.

4. A method of substantially achieving a minimum stopping distance of a freight train consist, according to claim 1, wherein said preselected information programmed into such computer disposed on a freight locomotive, in step (a), includes a velocity dependence of wheel to rail adhesion and said method includes an additional step of using said velocity dependence of wheel to rail adhesion in maintaining a maximum pressure on such brake cylinders that will stop such train consist in a shortest possible distance while simultaneously substantially preventing wheel slide.

5. A method of substantially achieving a minimum stopping distance of a freight train consist, according to claim 1, wherein said preselected information programmed into such computer disposed on a freight locomotive, in step (a), includes a weight of at least such train consist and said method includes an additional step of using said weight in maintaining a maximum pressure on such brake

cylinders that will stop such train consist in a shortest possible distance while simultaneously substantially preventing wheel slide.

5 6. A method of substantially achieving a minimum stopping distance of a freight train consist, according to claim 5, wherein said preselected information programmed into such computer disposed on a freight locomotive, in step (a), includes a weight of each car disposed in such train consist and said method includes an additional step of using said weight of said each car in
10 maintaining a maximum pressure on such brake cylinders that will stop such train consist in a shortest possible distance while simultaneously substantially preventing wheel slide.

15 7. A method of substantially achieving a minimum stopping distance of a freight train consist, according to claim 1, wherein said signal that is indicative of said speed determined in step (b) is an electrical signal communicated to such computer disposed on such freight locomotive.

20 8. A method of substantially achieving a minimum stopping distance of a freight train consist, according to claim 1, wherein said signal representative of such pressure determined in step (d) is an electrical signal communicated to such pressure control valve disposed in fluid communication with such brake cylinders.

9. A method of substantially achieving a minimum stopping distance of a freight train consist, according to claim 1, wherein at least one of said signals communicated in steps (c and e) is communicated as a radio signal.

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10. A method of substantially achieving a minimum stopping distance of a freight train consist, according to claim 9, wherein each of said signals communicated in steps (c and e) is communicated as a radio signal.

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Subs 11. An apparatus for substantially achieving a minimum stopping distance of a freight train consist without incurring any significant detrimental wheel slide, said apparatus comprising:

15 (a) a program having preselected information disposed in a computer disposed on a freight locomotive;

(b) a speed sensing means disposed on at least one of such locomotive and a freight car for determining a speed of such freight train consist;

20 (c) a means connected to said speed sensing means for communicating a signal that is indicative of said speed to such computer disposed on such freight locomotive, so that such program can determine a pressure that can be applied to brake cylinders which will maintain substantially maximum adhesion between wheels being braked and rail surfaces in contact with such wheels; and

25 (d) a means connected to such computer for communicating a signal representative of such pressure determined by said program

to a pressure control valve disposed in fluid communication with such brake cylinders and maintaining a maximum pressure on such brake cylinders that will stop such train consist in a shortest possible distance while simultaneously substantially preventing wheel slide.

12. An apparatus for substantially achieving a minimum stopping distance of a train consist, according to claim 11, wherein said means connected to said speed sensing means for communicating said signal that is indicative of said speed to such computer is a wire.

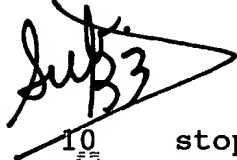
13. An apparatus for substantially achieving a minimum stopping distance of a train consist, according to claim 11, wherein said means connected to such computer for communicating a signal representative of such pressure determined by said program to said pressure control valve is a wire.

14. An apparatus for substantially achieving a minimum stopping distance of a train consist, according to claim 11, wherein said means connected to said speed sensing means for communicating said signal that is indicative of said speed to such computer is a radio transmitter.

15. An apparatus for substantially achieving a minimum stopping distance of a train consist, according to claim 11,

wherein said means connected to such computer for communicating a signal representative of such pressure determined by said program to said pressure control valve is a radio transmitter.

5 16. An apparatus for substantially achieving a minimum stopping distance of a train consist, according to claim 11, wherein said speed sensing means is disposed on said locomotive.

Sub B3  10 17. An apparatus for substantially achieving a minimum stopping distance of a train consist, according to claim 11, wherein said speed sensing means is disposed at least one freight car.

15 18. An apparatus for substantially achieving a minimum stopping distance of a train consist, according to claim 11, wherein said apparatus further includes a means disposed on such train consist for determining a weight of such train consist.

20 19. An apparatus for substantially achieving a minimum stopping distance of a train consist, according to claim 11, wherein said apparatus further includes a means disposed on such train consist for inputting information into such computer disposed on such locomotive.

20. An apparatus for substantially achieving a minimum stopping distance of a train consist, according to claim 11, wherein said means disposed on such train consist for inputting information into such computer is a keyboard.

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